LPDES PERMIT NO. LA0112771 (Agency Interest No. 83619)

LPDES FACT SHEET and RATIONALE
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

I. Company/Facility Name: Calpine Corporation
Washington Parish Energy Center
P.O. Box 460
Bogalusa, Louisiana 70427

II. Issuing Office: Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
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Date Prepared: November 8, 2005

IV. Permit Action/Status:

A. Reason For Permit Action:

Reissuance of a Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46*.

* In order to ease the transition from NPDES to LPDES permits, dual regulatory references are provided where applicable. The LAC references are the legal references while the 40 CFR references are presented for informational purposes only. In most cases, LAC language is based on and is identical to the 40 CFR language. 40 CFR Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903 and will not have dual references. In addition, state standards (LAC Chapter 11) will not have dual references.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. LPDES permit: Effective Date – July 1, 2000
Expiration Date – June 30, 2005

C. LPDES application received on December 21, 2004

V. Facility Information:

A. Location – 18400 Bennet Road, Bogalusa, Washington Parish

B. Applicant Activity - According to the application, the Washington Parish Energy Center, which is currently under construction, will be a 565-megawatt combined-cycle turbine power plant. The plant will consist of two natural gas fired combustion turbines and one steam turbines.

The raw water supply to the power plant will comes from deep wells on the property.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401-402, and 404-471 have been adopted by reference at LAC 33:IX.4903)

Guideline	Reference
Steam Electric Power Generating	40 CFR 423

Other sources of technology based limits:
- Best Professional Judgement

D. Fee Rate -
1. Fee Rating Facility Type: Major
2. Complexity Type: IV
3. Wastewater Type: III
4. SIC code: 4911

E. Continuous Facility Effluent Flow - 1.79 MGD

VI. Receiving Waters: Bogue Lusa Creek (Outfalls 001, 101 and 201), an unnamed waterbody thence to Adams Creek thence to Bogue Lusa Creek (Outfalls 002 and 005), and an unnamed ditch thence to Ice Water Branch thence to Bogue Lusa Creek (Outfalls 003 and 004)

A. TSS (15%), mg/L: 9.27
B. Average Hardness, mg/L $CaCO_3$: 3.0
C. Critical Flow, cfs: 16.73
D. Mixing Zone Fraction: 1

E. Harmonic Mean Flow, cfs: 55.6
F. River Basin: Pearl River, Segment No.: 090401
G. Designated Uses:
primary contact recreation, secondary contact recreation, and fish and wildlife propagation

TSS and Hardness values were taken from ambient sampling site No. 063, located in Bogue Lusa Creek at the bridge on HWY 60 in Bogalusa, Louisiana.

The flow values for the Bogue Lusa Creek were obtained from USGS flow monitoring station number 02490105, located on Bogue Lusa Creek at Highway 439 near Bogalusa, Louisiana. The data from this station has been recorded from April 1965 – March 1985.

VII. Outfall Information:

Outfall 001

A. Type of wastewater – The continuous discharge of cooling tower blowdown including previously monitored wastestreams from Internal Outfalls 101 and 201

B. Location – At the point of discharge from the polishing unit prior to combining with other waters (Latitude 30°47'31", Longitude 89°54'21").

C. Treatment – Polishing unit (consisting of a weak cationic exchange bed)

D. Flow – Continuous, 1.79 MGD

E. Receiving waters – Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Estimated effluent data – See attached pages from the application addendum (email) dated December 14, 2005 (Appendix A).

Outfall 101

A. Type of wastewater – The intermittent discharge of low volume wastewaters including but not limited to wastes discharged from the equipment drain sump (HRSG and boiler blowdown, contact stormwater, area drains and ww sumps, and spent steam from the HRSG), green sand filter backwash, and offline CT compressor wash

B. Location – At the point of discharge of low volume wastewater prior to discharge into the cooling tower basin. (Latitude 30°47'31", Longitude 89°54'21").

C. Treatment – Floor and area drains and stormwater: oil/water separator

D. Flow – Intermittent, 0.2 MGD

E. Receiving waters – Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data – No effluent data is available. Construction of the facility is not complete.

Outfall 201

A. Type of wastewater – The intermittent discharge of RO reject water and weak cation & mixed bed regeneration wastewater

B. Location – At the point of discharge from the RO/demineralizer system prior to combining with cooling tower blowdown and prior to discharge into the polishing unit (Latitude 30°47'31", Longitude 89°54'21").

C. Treatment – Neutralization

D. Flow – Intermittent, 0.03 MGD

E. Receiving waters – Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data – No effluent data is available. Construction of the facility is not complete.

Outfall 002

A. Type of wastewater – Non-contact stormwater runoff, maintenance wastewaters (including but not limited to equipment and fire protection system hydrostatic test water, and pressure wash wastewater), cooling tower mist, hydrostatic test water and general facility wastewaters

B. Location – At the point of discharge from the 5-acre retention pond during periods of overflow (Latitude 30°47'22", Longitude 89°54'38").

C. Treatment – None

D. Flow – Flow is intermittent

E. Receiving waters – Unnamed waterbody thence to Adams Creek, thence to Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data - No effluent data is available. Construction of the facility is not complete.

Outfall 003

A. Type of wastewater – Non-contact stormwater runoff, maintenance wastewaters (including but not limited to equipment and fire protection system hydrostatic test water, and pressure wash wastewater), cooling tower mist, hydrostatic test water and general facility wastewaters.

B. Location – At the point of discharge from the 0.25-acre retention pond (Latitude 30°47'34", Longitude 89°54'21").

C. Treatment – Stabilization and sedimentation

D. Flow – Flow is intermittent

E. Receiving waters – Unnamed ditch thence to Ice Water Branch, thence to Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data - No effluent data is available. Construction of the facility is not complete.

Outfall 004

A. Type of wastewater – Non-contact stormwater runoff, maintenance wastewaters (including but not limited to equipment and fire protection system hydrostatic test water, and pressure wash wastewater), cooling tower mist, hydrostatic test water and general facility wastewaters

B. Location – At the point of discharge from the low point in the southeast corner of the property prior to entering a culvert which goes under Weyerhaeuser Road (Latitude 30°47'26", Longitude 89°54'21").

C. Treatment – None

D. Flow – Flow is intermittent

E. Receiving waters – Unnamed ditch thence to Ice Water Branch thence to Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data - No effluent data is available. Construction of the facility is not complete.

Outfall 005

A. Type of wastewater – Non-contact stormwater runoff, maintenance wastewaters (including but not limited to equipment and fire protection system hydrostatic test water, and pressure wash wastewater), cooling tower mist, hydrostatic test water and general facility wastewaters

B. Location – At the point of discharge from the property prior discharge into the north-south ditch along the western boundary of the plant area (Latitude 30°47'23", Longitude 89°54'38").

C. Treatment – None

D. Flow – Flow is intermittent

E. Receiving waters – Unnamed waterbody thence to Adams Creek, thence to Bogue Lusa Creek

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data - No effluent data is available. Construction of the facility is not complete.

Outfall 102

A. Type of wastewater – The intermittent discharge hydrostatic test water

B. Location – At the point of discharge from the pipe or vessel prior to discharge via Final Outfall 002, 003, 004 or 005

C. Treatment – None

D. Flow – Flow varies depending on vessel

E. Receiving waters – Unnamed waterbody thence to Adams Creek thence to Bogue Lusa Creek (When discharging to Outfalls 002, 005 and 102), or an unnamed ditch thence to Ice Water Branch thence to Bogue Lusa Creek (When discharging to Outfalls 003, 004 and 102)

F. Basin and segment – Pearl River Basin, Segment 090401

G. Effluent data – No effluent data is available. Construction of the facility is not complete.

VIII. Proposed Permit Limits and Rationale:

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. CHANGES FROM THE PREVIOUS PERMIT

1. Outfall 001 and Internal Outfalls 101 and 201 - The Washington Parish Energy Center is currently under construction. Since issuance of Calpine's initial LPDES permit, several design changes have been made. The current permit authorizes the discharge of cooling tower blowdown from Outfall 001. The permittee currently plans to recycle low volume wastewaters (previously permitted under Outfall 002) by placing them in the cooling tower basin to be reused as cooling makeup water. In accordance with 40 CFR 423, the draft permit requires internal sampling of these low volume wastewaters (at Outfall 101 prior to combining with other waters in the cooling tower basin). A portion of the low volume wastewater from the facility will not be discharged to the cooling tower basin, but will combine with the cooling tower blowdown discharge prior to Final Outfall 001. This wastewater from the reverse osmosis/demineralizer system will comprise Internal Outfall 201. In accordance with 40 CFR 423, the draft permit requires internal sampling of this wastewater (at Outfall 201 prior to combining with other waters). Therefore, in the draft renewal permit, there are two new internal outfalls for low volume wastewater.

2. Outfall 001 – The mass limitations for free available chlorine, and total chromium (daily max) have increased due to the facility's increase in estimated flow from the cooling tower.

3. Low volume wastewaters – the pH monitoring requirements for low volume wastewater (previously Outfall 002) have been removed since these wastewaters will be monitored internally. Limitations for pH are established at Final Outfall 001.

4. Outfalls 002, 003, 004 and 005 - Stormwater has been added to the permit. Additionally, the facility has changed its plans to include two stormwater retention ponds. The discharge from these retention ponds will comprise Outfalls 002 and 003. In addition to the outfalls, Stormwater Pollution Prevention Plan requirements have been added to the permit.

5. Outfall 001 - Monitoring for Total Chromium has been increased to 1/week because the monthly average is a water quality based limitation.

6. Outfall 102 – An internal outfall for hydrostatic test water has been added to the permit.

B. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

The Washington Parish Energy Center is subject to New Source Performance Standards (NSPS) effluent limitation guidelines listed below:

Manufacturing Operation	Guideline
Steam Electric Power Generating	40 CFR 423 (New Source Performance Standards)

Proposed effluent limitations and basis of permit limitations are found below:

Outfall 001 – Cooling tower blowdown including previously monitored wastestreams from Internal Outfalls 101 and 201

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	*Daily Max*		
Flow	Report	Report	Continuous	LAC 33:IX.2707.I.1.b, previous permit
pH	--- (*1)	--- (*1)	Continuous	40 CFR 423.15(a), previous permit
Temperature	Report	99°F	Continuous	LAC33:IX.1123 & LAC33:IX.1113(C)(4), previous permit
Free Available Chlorine	0.2 mg/l : 2.99 lbs/day	0.5 mg/l : 7.5 lbs/day	1/week	40 CFR 423.15(j)(1), previous permit
Total Chromium	0.1 mg/l : 1.54 lbs/day	0.2 mg/l : 2.99 lbs/day	1/week	Monthly Avg: Water Quality Based Limitations Daily Max: 40 CFR 423.15(j)(1), previous permit
Total Zinc	0.014 mg/l 0.2 lbs/day	0.032 mg/l : 0.48 lbs/day	1/week	Water Quality Based Limitations
Biomonitoring	See Section C (Biomonitoring Requirements) below	See Section C (Biomonitoring Requirements) below	1/3 months	See Section C (Biomonitoring Requirements) below

(*1) Where a permittee continuously measures the pH of wastewater as a requirement or option in a Louisiana Pollutant Discharge Elimination System (LPDES) permit, the permittee shall maintain the pH of such wastewater within the range set forth in the permit, except that excursions from the range are permitted, provided:

a) The total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month; and

b) No individual excursion from the range of pH values shall exceed 60 minutes.

For the purposes of this section, an "excursion" is an unintentional and temporary incident in which the pH value of discharge wastewater exceeds the range set forth in the permit.

Outfall 101 – The intermittent discharge of low volume wastewaters including but not limited to floor and area drain wastewater, filter backwash, offline CT compressor wash, spent steam and blowdown from the HRSG and auxiliary boiler, and contact stormwater

Outfall 201 – The intermittent discharge of RO reject water and weak cation & mixed bed regeneration wastewater

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	*Daily Max*		
Flow	Report	Report	1/day	LAC 33:IX.2707.I.1.b, previous permit
Oil & Grease	15 mg/l(*1)	20 mg/l(*1)	1/week	40 CFR 423.15(c), previous permit
TSS	30 mg/l(*1)	100 mg/l(*1)	1/week	40 CFR 423.15(c), previous permit

(*1) In accordance with 423.15(m), limitations for TSS and Oil & Grease are established in concentration only.

Outfall 002 - Non-contact stormwater runoff, maintenance wastewaters, and cooling tower mist
Outfall 003 - Non-contact stormwater runoff, maintenance wastewaters, and cooling tower mist
Outfall 004 - Non-contact stormwater runoff, maintenance wastewaters, and cooling tower mist
Outfall 005 - Non-contact stormwater runoff, maintenance wastewaters, and cooling tower mist

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	*Daily Max*		
Flow	Report	Report	1/day	LAC 33:IX.2707.I.1.b, previous permit
TOC	---	50	1/week	LAG670000, previous permit
Oil & Grease	15	20	1/week	BPJ, 40 CFR 423.15, previous permit
pH	6.0 s.u. (Min)	9.0 s.u. (Max)	1/week	BPJ, 40 CFR 423.15(a), previous permit

Outfall 102 – Hydrostatic test waters

Parameter	Effluent Limitations		Monitoring Freq.	Reference
	Monthly Avg	*Daily Max*		
Flow	Report	Report	1/discharge	LAC 33:IX.2707.I.1.b
TSS	---	90 mg/l	1/discharge	LPDES Hydrostatic Test Water General Permit (LAG670000)
Benzene (*1) (*2)	---	50 µg/L	1/discharge	LPDES Hydrostatic Test Water General Permit (LAG670000)
Total BTEX (*1)(*3)	---	250 µg/L	1/discharge	LPDES Hydrostatic Test Water General Permit (LAG670000)

Total Lead (*2)	---	50 µg/L	1/discharge	LPDES Hydrostatic Test Water General Permit (LAG670000)

(*1) Sampling for Benzene, Total BTEX, and Total Lead is **only** required when discharging hydrostatic test waters from **existing** pipes, tanks, vessels, and/or equipment that have been used for the storage or transportation of liquid or gaseous petroleum hydrocarbons, i.e. diesel tanks or natural gas lines.

(*2) For Discharge Monitoring Report calculations and reporting requirements for benzene, analytical test results less than 10 µg/L may be reported as zero.

(*3) BTEX shall be measured as the sum of benzene, toluene, ethylbenzene, and total xylene (including ortho-, meta-, and para-xylene) as quantified by EPA methods 601, 602, or 1624.

B. MONITORING FREQUENCIES

All monitoring frequencies are based upon best professional judgement and are consistent with frequencies previously applied to other major steam electric generating facilities. Whole Effluent Toxicity testing frequency is based upon recommendations from the Municipal and General Water Permits Section (see Appendix B).

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. Calculations, results, and documentation are given in Appendix C.

In accordance with 40 CFR § 122.44 (d)(1)/LAC 33:IX.2707.D.1, the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001, to determine whether pollutants would be discharged "at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix C.

The following pollutants received water quality based effluent limits:

Total Chromium
Total Zinc

Minimum quantification levels (MQL's) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, September 27, 2001. They are also listed in Part II of the permit.

To further ensure compliance with 40 CFR 122.44(d)(l), whole effluent toxicity testing has been established for Outfall 001 (See Section VII.D below).

D. BIOMONITORING REQUIREMENTS

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall 001 are as follows:

TOXICITY TESTS	FREQUENCY(*1)
NOEC, Pass/Fail [0/1], Lethality, Static Renewal, 7-Day Chronic, Pimephales promelas	1/3 months (*2)
NOEC, Value [%], Lethality, Static Renewal, 7-Day Chronic, Pimephales promelas	1/3 months(*2)
NOEC, Value [%], Growth, Static Renewal, 7-Day Chronic, Pimephales promelas	1/3 months(*2)
NOEC, Pass/Fail [0/1], Growth, Static Renewal, 7-Day Chronic, Pimephales promelas	1/3 months (*2)

NOEC, Value [%] Coefficient of Variation, Static Renewal 7-Day Chronic, Pimephales promelas	1/3 months(*2)
NOEC, Pass/Fail [0/1], Lethality, Static Renewal 7-Day Chronic, Ceriodaphnia dubia	1/3 months (*3)
NOEC, Value [%], Lethality, Static Renewal, 7-Day Chronic Ceriodaphnia dubia	1/3 months (*3)
NOEC, Value [%], Reproduction, Static Renewal, 7-Day Chronic, Ceriodaphnia dubia	1/3 months (*3)
NOEC, Pass/Fail [0/1], Reproduction, Static Renewal, 7-Day Chronic, Ceriodaphnia dubia	1/3 months (*3)
NOEC, Value [%] Coefficient of Variation, Static Renewal 7-Day Chronic, Ceriodaphnia dubia	1/3 months (*3)

(*1) The permittee must collect the 24-hour composite samples such that the effluent samples are representative of any periodic episode of chlorination, biocide usage or other potentially toxic substance discharged on an intermittent basis. However, if no biofouling agent or chlorine is used during the monitoring period, the permittee must still conduct the required quarterly testing.

(*2) If lethal effects are not exhibited at the critical dilution, or the half low-flow concentration after the first year of quarterly testing, the monitoring frequency shall be once per six months.

(*3) If lethal effects are not exhibited at the critical dilution, or the half low-flow concentration after the first year of quarterly testing, the monitoring frequency shall be once per year.

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to

provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to this Office. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 6%, 8%, 11%, 14%, and 19%. The low-flow effluent concentration (critical dilution) is defined as 14% effluent.

IX. Compliance History/DMR Review:

The facility is currently under construction. Therefore there is no enforcement/compliance history.

IX. Endangered Species:

The receiving waterbody, Subsegment 090401 of the Pearl River Basin is listed in Section II.2 of the Implementation Strategy as critical habitat for the Gulf Sturgeon. Therefore, the renewal LPDES permit requires consultation with the U.S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated October 21, 2005 from Watson (FWS) to Gautreaux (LDEQ). This Office has determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. The preliminary draft permit for the Washington Parish Energy Center will be sent to the FWS for review.

X. Historic Sites:

This discharge from the Washington Parish Energy Center is from a proposed facility which is currently under construction. However, the facility received its initial LPDES permit in July of 2000. During review of the initial LPDES permit, LDEQ consulted with the State Historic Preservation Office (SHPO) in a letter dated January 12, 2000, to determine whether construction-related activities could potentially affect sites or properties on or eligible for listing on the National Historic Register of Historic Places. In accordance with the "Memorandum of Understanding (MOU) for the Protection of Historic Properties in Louisiana Regarding LPDES Permits, "If no comments are received by LDEQ within the 30-day comment period, the LDEQ may consider that the SHPO has waived the right to provide comments, and the LDEQ may proceed with the permitting action. This Office did not receive comments from the SHPO; therefore, this Office is proceeding with issuance of a renewal permit.

XI. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to issue a permit for the discharge described in the application.

XII. Variances:

No requests for variances have been received by this Office.

XIII. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

A public notice will be published in a local newspaper of general circulation and in the Office of Environmental Services Public Notice Mailing List

XV. TMDL Waterbodies:

Subsegment 090401, is listed on LDEQ's Final 2004 303(d) List as impaired for pathogen indicators. To date no TMDLs have been completed for this waterbody. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by a TMDL. Until completion of TMDLs for the Pearl River Basin, those suspected causes for impairment which are not directly attributed to the steam

electric generating point source category have been eliminated in the formulation of effluent limitations and other requirements of this permit. The only potential source of pathogen indicators from the Washington Parish Energy Center would be from sanitary wastewater. The facility proposes to install a no discharge septic system for the treatment of sanitary wastewaters. The wastewater from the septic system will discharge to a holding tank for regular removal by a licensed hauler and disposal to a permitted POTW or other approved permitted facility. Therefore, no limitations for Fecal Coliform have been established in this permit.

XVI . 316(b) Requirements:

The Washington Parish Energy Center is a proposed electric generating facility. However the facility does not operate a cooling water intake structure. Makeup water for the facility will be taken from several deep wells on the property. Therefore, the requirements of the 316(b) Phase I or Phase II rule for cooling water intake structures are not applicable to the Washington Parish Energy Center.

XVII. STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS:

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I)(.3) and (4)], a Part II condition is proposed for applicability to all stormwater discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. The Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit, along with other requirements. If the permittee maintains other plans that contain duplicative information, that plan could be incorporated by reference into the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasure Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of storm water associated with industrial activity, as defined at LAC 33:IX.2511.B.14 [(40 CFR 122.26(b)(14)].

Appendix A

Estimated Effluent data

Outfall 001

Pollutant (Outfall Number)	Detection Level Used	Maximum Daily Value Conc.	Maximum Daily Value Mass	Average of Analyses Conc.	Average of Analyses Mass	Number of Analyses	Units Conc.	Units Mass
Acenaphthene	NPA			0				
Acrolein	NPA			0				
Acrylonitrile	NPA			0				
Benzene	NPA			0				
Benzidine	NPA			0				
Carbon Tetrachloride	NPA			0				
Chlorobenzene	NPA			0				
1,2,4-Trichlorobenzene	NPA			0				
Hexachlorobenzene	NPA			0				
1,2-Dichloroethane	NPA			0				
1,1,1-Trichloroethane	NPA			0				
Hexachloroethane	NPA			0				
1,1-Dichloroethane	NPA			0				
1,1,2-Trichloroethane	NPA			0				
1,1,2,2-Tetrachloroethane	NPA			0				
Chloroethane	NPA			0				
Bis(2-chloroethyl)ether	NPA			0				
2-Chloroethyl vinyl ether	NPA			0				
2-Chloronaphthalene	NPA			0				
2,4,6-Trichlorophenol	NPA			0				
Parachlorometa cresol	NPA			0				
Chloroform	NPA			0				
2-Chlorophenol	NPA			0				
1,2-Dichlorobenzene	NPA			0				
1,3-Dichlorobenzene	NPA			0				
1,4-Dichlorobenzene	NPA			0				
3,3-Dichlorobenzidine	NPA			0				
1,1-Dichloroethylene	NPA			0				
1,2-Trans-dichloroethylene	NPA			0				
2,4-Dichlorophenol	NPA			0				
1,2-Dichloropropane	NPA			0				
1,2-Dichloropropylene	NPA			0				
1,3-Dichloropropylene	NPA			0				
2,4-Dimethylphenol	NPA			0				

Pollutant	Detection Level Used	Maximum Daily Value Conc.	Maximum Daily Value Mass	Average of Analyses Conc.	Average of Analyses Mass	Number of Analyses	Units Conc.	Units Mass
2,4-Dinitrotoluene	NPA			0				
2,6-Dinitrotoluene	NPA			0				
1,2-Diphenylhydrazine (as Azobenzene)	NPA			0				
Ethylbenzene	NPA			0				
Fluoranthene	NPA			0				
4-Chlorophenyl phenyl ether	NPA			0				
4-Bromophenyl phenyl ether	NPA			0				
Bis(2-chloroisopropyl)ether	NPA			0				
Bis(2-chloroethoxy) methane	NPA			0				
Methylene chloride	NPA			0				
Methyl chloride	NPA			0				
Methyl bromide	NPA			0				
Bromoform	NPA			0				
Dichlorobromomethane	NPA			0				
Chlorodibromomethane	NPA			0				
Hexachlorobutadiene	NPA			0				
Hexachlorocyclopentadiene	NPA			0				
Isophorone	NPA			0				
Naphthalene	NPA			0				
Nitrobenzene	NPA			0				
2-Nitrophenol	NPA			0				
4-Nitrophenol	NPA			0				
2,4-Dinitrophenol	NPA			0				
4,6-Dinitro-o-cresol	NPA			0				
N-nitrosodimethylamine	NPA			0				
N-nitrosodiphenylamine	NPA			0				
N-nitrosodi-n-propylamine	NPA			0				
Pentachlorophenol	NPA			0				
Phenol	NPA			0				
Bis(2-ethylhexyl)phthalate	NPA			0				
Butyl benzyl phthalate	NPA			0				
Di-n-butyl phthalate	NPA			0				
Di-n-octyl phthalate	NPA			0				

Pollutant	Detection Level Used	Maximum Daily Value	Maximum Daily Value	Average of Analyses	Average of Analyses	Number of Analyses	Units	Units
		Conc.	Mass	Conc.	Mass		Conc.	Mass
Diethyl phthalate	NPA			0				
Dimethyl phthalate	NPA			0				
Benzo(a)anthracene	NPA			0				
Benzo(a)pyrene	NPA			0				
3,4-Benzofluoranthene	NPA			0				
Benzo(k)fluoranthane	NPA			0				
Chrysene	NPA			0				
Acenaphthylene	NPA			0				
Anthracene	NPA			0				
Benzo(ghi)perylene	NPA			0				
Fluorene	NPA			0				
Phenanthrene	NPA			0				
Dibenzo(a,h)anthracene	NPA			0				
Ideno(1,2,3-cd)pyrene	NPA			0				
Pyrene	NPA			0				
Tetrachloroethylene	NPA			0				
Toluene	NPA			0				
Trichloroethylene	NPA			0				
Vinyl Chloride	NPA			0				
Aldrin	NPA			0				
Dieldrin	NPA			0				
Chlordane	NPA			0				
4,4'-DDT	NPA			0				
4,4'-DDE	NPA			0				
4,4'-DDD	NPA			0				
alpha-endosulfan	NPA			0				
Beta-endosulfan	NPA			0				
Endosulfan sulfate	NPA			0				
Endrin	NPA			0				
Endrin aldehyde	NPA			0				
Heptachlor	NPA			0				
Heptachloro epoxide	NPA			0				
Alpha-BHC	NPA			0				
Beta-BHC	NPA			0				
Gamma BHC	NPA			0				
Delta-BHC	NPA			0				

Pollutant	Detection Level Used	Maximum Daily Value	Maximum Daily Value	Average of Analyses	Average of Analyses	Number of Analyses	Units	Units
		Conc.	Mass	Conc.	Mass		Conc.	Mass
PCB-1242	NPA			0				
PCB-1254	NPA			0				
PCB-1221	NPA			0				
PCB-1232	NPA			0				
PCB-1248	NPA			0				
PCB-1260	NPA			0				
PCB-1016	NPA			0				
Toxaphene	NPA			0				
2,3,7,8-TCDD	NPA			0				
Asbestos	NPA			0				
pH	Grab	8.5	NA	7.64		66	s.u.	
Biochemical Oxygen Demand (5-day)	Comp/SM 5210B	12		4.6		17	mg/l	
Chemical Oxygen Demand								
Chlorides, Total	Contributor to TDS							
Chlorine, Total Residual	Eng			0.1			ppm	
Flouride	NPA			0				
Magnesium, Total	NPA			0				
	NPA			0				
Oil and Grease	Grab\EPA 1664	97		11.6		17	mg/l	
Total Suspended Solids	Comp\EPA 160.2	19		8.4		17	mg/l	
Total Organic Carbon								
Kjeldahl N								
Nitrate + Nitrite (as N)								
Total Organic N								
Phosphorous (as P)	Eng			5.0			mg/l	
Sulfate (SO_4)	NPA			0				
Sulfide(S)	Eng			0				
Sulfite (SO_3)	Eng			0				
Temperature (Winter)								
Temperature (Summer) (8/05)	Grab	92		91		2	°F	
Color, ADMI	Eng			0				

Pollutant	Detection Level Used	Maximum Daily Value Conc.	Maximum Daily Value Mass	Average of Analyses Conc.	Average of Analyses Mass	Number of Analyses	Units Conc.	Units Mass
Antimony, Total	NPA(3)			0				
Arsenic, Total	NPA(3)			0				
Barium, Total	NPA(3)			0				
Beryllium, Total	NPA(3)			0				
Cadmium, Total	NPA(3)			0				
Chromium, Total	Comp\EPA 200.7	< 0.05		<0.02		15	mg/l	
Copper, Total	Comp\EPA 200.7	0.1		0.1		2	mg/l	
Cyanide, Total	NPA(3)			0				
Lead, Total	NPA(3)			0				
Mercury, Total	NPA(3)			0				
Nickel, Total	NPA(3)			0				
Selenium, Total	NPA(3)			0				
Silver, Total	NPA(3)			0				
Thallium, Total	NPA(3)			0				
Zinc, Total	Comp\EPA 200.7	<0.06		<0.03		15	mg/l	

Comments:

1) Washington Parish Energy Center is a new facility. No data is available. Data presented here is taken from a similar Calpine operated facility and represents best engineering estimates of expected discharge quality.
2) Detection level column=Sample method/analytical method/detection level (Comp=Composite Sample, Eng=Engineering Knowledge, NPA=No process Addition). Calpine knows of no reason other than presence in the incoming raw water at levels currently below detection that substances marked NPA would be found in the discharge.
3) Processes at the Washington Parish Energy Center are not expected to add these constituents. Because of the nature of cooling tower operations, constituents present in source raw water (groundwater) at levels below detection may appear in discharge.

Appendix B

Biomonitoring Recommendation

BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: LA0112771
Facility Name: **Calpine Corporation/Washington Parish Energy Center**
Previous Critical Dilution: **9.78%** Proposed Critical Dilution: **14%**
Date of Review: **11/29/05** Name of Reviewer: **Kim Gunderson**

Recommended Frequency by Species:

***Pimephales promelas* (Fathead minnow): Once/Quarter[1]**
***Ceriodaphnia dubia* (water flea): Once/Quarter[1]**

Recommended Dilution Series: **6%, 8%, 11%, 14%, and 19%**

Number of Tests Performed during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): 0[2]**
***Daphnia pulex* (water flea): N/A – Testing of species was not required**
***Daphnia magna* (water flea): N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea): 0[2]**

Number of Failed Tests during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): No failures on file during the past 5 years[2]**
***Daphnia pulex* (water flea): N/A – Testing of species was not required**
***Daphnia magna* (water flea): N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea): No failures on file during the past 5 years[2]**

Failed Test Dates during previous 5 years by Species:

***Pimephales promelas* (Fathead minnow): No failures on file during the past 5 years[2]**
***Daphnia pulex* (water flea): N/A – Testing of species was not required**
***Daphnia magna* (water flea): N/A – Testing of species was not required**
***Ceriodaphnia dubia* (water flea): No failures on file during the past 5 years[2]**

Previous TRE Activities: **N/A – No previous TRE Activities**

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[1] If there are no lethal or sub-lethal effects demonstrated after the first year of quarterly testing, the permittee may certify fulfillment of the WET testing requirements in writing to the permitting authority. If granted, the monitoring frequency for the test species may be reduced to not less than once per year for the less sensitive species (usually *Pimephales promelas*) and not less than twice per year for the more sensitive species (usually *Ceriodaphnia dubia*). Upon expiration of the permit, the monitoring frequency for both species shall revert to once per quarter until the permit is re-issued.

[2] This facility is still under construction; therefore, biomonitoring has not begun on Outfall 001. The estimated completion date for construction is in May, 2007 and the facility operations are expected to begin in June, 2007.

Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

Calpine Corporation/Washington Parish Energy Center owns and operates a steam electric generating facility near Bogalusa, Washington Parish, Louisiana. LPDES Permit LA0112771, effective July 1, 2000, contained chronic freshwater biomonitoring as an effluent characteristic of Outfall 001 for *Pimephales promelas* and *Ceriodaphnia dubia*. The effluent series consisted of 4.13%, 5.50%, 7.34%, 9.78%, and 13.04% concentrations, with 9.78% being defined as the critical dilution. Testing was to be performed quarterly for *Ceriodaphnia dubia* and *Pimephales promelas*. This facility is still under construction; therefore, biomonitoring has not begun on Outfall 001. The estimated completion date is in May, 2007, and the facility operations are expected to begin in June, 2007.

To adequately assess the facility's effluent potential for receiving stream and/or aquatic species toxicity, it is recommended that freshwater chronic biomonitoring continue to be an effluent characteristic of Outfall 001 (discharge of 1.79 MGD of cooling tower blowdown and low volume wastewaters) in LA0112771. The effluent dilution series shall be 6%, 8%, 11%, 14%, and 19% concentrations, with 14% being defined as the critical dilution. Therefore, in accordance with the Environmental Protection Agency (Region 6) WET testing frequency acceleration(s), the biomonitoring frequency shall be once per quarter for *Ceriodaphnia dubia* and *Pimephales promelas*. If there are no significant lethal or sub-lethal effects demonstrated at or below the critical dilution during the first four quarters of testing, the permittee may certify fulfillment of the WET testing requirements to the permitting authority and WET testing may be reduced to not less than once per six months for the more sensitive species (usually *Ceriodaphnia dubia*) and not less than once per year for the less sensitive species (usually *Pimephales promelas*) for the remainder of the term of the permit. Upon expiration of the permit, the monitoring frequency for both test species shall revert to once per quarter until the permit is re-issued.

Additional monitoring shall be conducted upon the usage of chlorine or any biofouling agent(s).

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, EPA Region 6 Post-Third Round Whole Effluent Toxicity Testing Frequencies (Revised June 30, 2000), and the Best Professional Judgement (BPJ) of the reviewer.

Appendix C

Water Quality Spreadsheet and Documentation

Developer: Bruce Fielding Time: 10:33 AM

Software: Lotus 4.0 LA0112771 / AI 83619

Revision date: 12/13/02

Water Quality Screen for Calpine Corporation/Washington Parish Energy Center

Input variables:

Receiving Water Characteristics:

Receiving Water Name=	Washington Parish Energy Center
Critical flow (Qr) cfs=	16.73
Harm. mean/avg tidal cfs=	55.6
Drinking Water=1 HHNPCR=2	
Marine, 1=y, 0=n	
Rec. Water Hardness=	3
Rec. Water TSS=	9.27
Fisch/Specific=1,Stream=0	
Diffuser Ratio=	

Effluent Characteristics:

Permittee=	Washington Parish Energy Center
Permit Number=	LA0112771/AI 83619
Facility flow (Qef),MGD=	1.79
Outfall Number =	001
Eff. data, 2=lbs/day	
MQL, 2=lbs/day	
Effluent Hardness=	N/A
Effluent TSS=	N/A
WQBL ind. 0=y, 1=n	
Acute/Chr. ratio 0=n, 1=y	0
Aquatic,acute only1=y,0=n	
Page Numbering/Labeling	
Appendix	Appendix C-1
Page Numbers 1=y, 0=n	1
Input Page # 1=y, 0=n	1

Fischer/Site Specific inputs:

Pipe=1,Canal=2,Specific=3	
Pipe width, feet	
ZID plume dist., feet	
MZ plume dist., feet	
HHnc plume dist., feet	
HHc plume dist., feet	

Fischer/site specific dilutions:

F/specific ZID Dilution =	---
F/specific MZ Dilution =	---
F/specific HHnc Dilution=	---
F/specific HHc Dilution=	---

Dilution:

ZID Fs =	0.1
MZ Fs =	1
Critical Qr (MGD)=	10.8126
Harm. Mean (MGD)=	35.93428
ZID Dilution =	0.62342
MZ Dilution =	0.142034
HHnc Dilution=	0.142034
HHc Dilution=	0.04745
ZID Upstream =	0.604056
MZ Upstream =	6.040558
MZhhnc Upstream=	6.040558
MZhhc Upstream=	20.07502
ZID Hardness=	---
MZ Hardness=	---
ZID TSS=	---
MZ TSS=	---

Multipliers:

WLAa --> LTAa	0.32
WLAc --> LTAc	0.53
LTA a,c-->WQBL avg	1.31
LTA a,c-->WQBL max	3.11
LTA h --> WQBL max	2.38
WQBL-limit/report	2.13
WLA Fraction	1
WQBL Fraction	1

Conversions:

ug/L-->lbs/day Qef	0.014929
ug/L-->lbs/day Qeo	0
ug/L-->lbs/day Qr	0.139528
lbs/day-->ug/L Qeo	66.98552
lbs/day-->ug/L Qef	66.98552
diss-->tot 1=y0=n	1
Cu diss->tot1=y0=n	1
cfs-->MGD	0.6463

Receiving Stream:

Default Hardness=	25
Default TSS=	10
99 Crit., 1=y, 0=n	1

Toxicity Dilution Series:

Biomonitoring dilution:	0.142034
Dilution Series Factor:	0.75

	Percent Effluent
Dilution No. 1	18.936%
Dilution No. 2	14.2034%
Dilution No. 3	10.6526%
Dilution No. 4	7.9894%
Dilution No. 5	5.9921%

Partition Coefficients; Dissolved-->Total

METALS	FW
Total Arsenic	1.875695
Total Cadmium	3.994606
Chromium III	4.926765
Chromium VI	1
Total Copper	2.855556
Total Lead	5.370931
Total Mercury	3.123278
Total Nickel	2.276557
Total Zinc	3.438001

Aquatic Life, Dissolved Metal Criteria, ug/L

METALS	ACUTE	CHRONIC
Arsenic	339.8	150
Cadmium	0.703746	0.076294
Chromium III	31.05471	10.07383
Chromium VI	15.712	10.582
Copper	0.676983	0.613817
Lead	1.224333	0.04771
Mercury	1.734	0.012
Nickel	72.86614	8.092369
Zinc	5.865036	5.355667

Site Specific Multiplier Values:

CV =	---
N =	---
WLAa --> LTAa	---
WLAc --> LTAc	---
LTA a,c-->WQBL avg	---
LTA a,c-->WQBL max	---
LTA h --> WQBL max	---

(*1) Toxic Parameters	(*2) Instream Conc. ug/L	(*3) CuEffluent /Tech (Avg) ug/L	(*4) Effluent /Tech (Max) ug/L	(*5) MQL ug/L	(*6) 1=No 0=95 %	(*7) Effluent 95th % estimate Non-Tech ug/L	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHNDW ug/L	(*11) HH Carcinogen Indicator "C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenocy-acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			637.3611	281.3542		
Total Cadmium				1			2.811187	0.304765		
Chromium III		200	200	10	1		152.9992	49.63137		
Chromium VI				10			15.712	10.582		
Total Copper				10			1.933162	1.75279		
Total Lead				5			6.575806	0.25625		
Total Mercury				0.2			5.415764	0.037479		
Total Nickel				40			165.8839	18.42274		
Total Zinc		1000	1000	20	1		20.164	18.41279		
Total Cyanide				20			45.9	5.2	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin			1.0E-005						7.2E-007	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-ethane				10			932	466	1.8	C

(*1) Toxic Parameters	(*12) WLAa Acute	(*13) WLAc Chronic	(*14) WLAh HHNDW	(*15) LTAa Acute	(*16) LTAc Chronic	(*17) LTAh HHNDW	(*18) Limiting A,C,HH	(*19) WQBL Avg 001	(*20) WQBL Max 001	(*21) WQBL Avg 001	(*22) WQBL Max 001	(*23) Need WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	1122.839	2464.195	352.0279	359.3085	1306.024	352.0279	352.0279	352.0279	837.8264	5.255284	12.50758	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	614.3534	1351.787	---	196.5931	716.4472	---	196.5931	257.5369	611.4045	3.844666	9.127413	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenocy-acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	1022.363	1980.891	---	327.1561	1049.872	---	327.1561	428.5745	1017.455	6.398017	15.18518	no
Total Cadmium	4.509301	2.145719	---	1.442976	1.137231	---	1.137231	1.489772	3.536788	0.02224	0.052799	no
Chromium III	245.4193	349.4325	---	78.53418	185.1992	---	78.53418	102.8798	244.2413	1.535851	3.646181	yes
Chromium VI	25.20292	74.50319	---	8.064936	39.48669	---	8.064936	10.56507	25.08195	0.157722	0.374438	no
Total Copper	3.1009	12.34062	---	0.992288	6.540528	---	0.992288	1.299897	3.086016	0.019406	0.04607	no
Total Lead	10.54796	1.804141	---	3.375347	0.956195	---	0.956195	1.252615	2.973766	0.0187	0.044394	no
Total Mercury	8.687187	0.263875	---	2.7799	0.139854	---	0.139854	0.183209	0.434946	0.002735	0.006493	no
Total Nickel	266.0871	129.7064	---	85.14787	68.74439	---	68.74439	90.05515	213.795	1.344397	3.191661	no
Total Zinc	32.34418	129.6363	---	10.35014	68.70725	---	10.35014	13.55868	32.18893	0.202412	0.480536	yes
Total Cyanide	73.62616	36.6109	90428.93	23.56037	19.40378	90428.93	19.40378	25.41895	60.34575	0.379469	0.900878	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	0.000015	---	---	0.000015	0.000015	0.000015	0.000036	2.3E-007	5.4E-007	no
VOLATILE COMPOUNDS												
Benzene	3607.522	7920.628	263.4377	1154.407	4197.933	263.4377	263.4377	263.4377	626.9817	3.932756	9.35996	no
Bromoform	4699.884	10314.42	731.3031	1503.963	5466.641	731.3031	731.3031	731.3031	1740.501	10.91733	25.98325	no
Bromodichloromethane	---	---	69.54756	---	---	69.54756	69.54756	69.54756	165.5232	1.038248	2.471029	no
Carbon Tetrachloride	4379.072	9610.362	25.29002	1401.303	5093.492	25.29002	25.29002	25.29002	60.19025	0.377545	0.898556	no
Chloroform	4635.721	10173.61	1475.251	1483.431	5392.011	1475.251	1475.251	1475.251	3511.098	22.02343	52.41577	no
Dibromochloromethane	---	---	107.0611	---	---	107.0611	107.0611	107.0611	254.8054	1.598272	3.803888	no
1,2-Dichloroethane	18927.86	41539.29	143.3101	6056.915	22015.83	143.3101	143.3101	143.3101	341.0781	2.139419	5.091818	no
1,1-Dichloroethylene	1860.705	4083.524	12.22351	595.4255	2164.268	12.22351	12.22351	12.22351	29.09195	0.18248	0.434302	no
1,3-Dichloropropylene	972.0578	2133.289	1146.132	311.0585	1130.643	1146.132	311.0585	407.4866	967.3919	6.083205	14.44181	no
Ethylbenzene	5132.979	11264.89	57028.52	1642.553	5970.393	57028.52	1642.553	2151.745	5108.34	32.12253	76.26037	no
Methyl Chloride	88223.07	193615.3	---	28231.38	102616.1	---	28231.38	36983.11	87799.6	552.1061	1310.725	no
Methylene Chloride	30958.28	67941.39	1833.526	9906.649	36008.93	1833.526	1833.526	1833.526	4363.793	27.37198	65.14532	no
1,1,2,2-Tetrachloro-ethane	1494.98	3280.9	37.93503	478.3936	1738.877	37.93503	37.93503	37.93503	90.28537	0.566317	1.347834	no

(*1) Toxic Parameters	(*2) Instream Conc. ug/L	(*3) Effluent /Tech (Avg) ug/L	(*4) Effluent /Tech (Max) ug/L	(*5) MQL ug/L	(*6) Effluent 95th % 1=No 95% 0=95 %	(*7) estimate Non-Tech ug/L	(*8) Numerical Criteria Acute FW ug/L	(*9) Chronic FW ug/L	(*10) HHNDW ug/L	(*11) HH Carcinogen Indicator "C"
VOLATILE COMPOUNDS (cont'd)										
Tetrachloroethylene				10			1290	645	2.5	C
Toluene				10			1270	635	46200	
1,1,1-Trichloroethane				10			5280	2640		
1,1,2-Trichloroethane				10			1800	900	6.9	C
Trichloroethylene				10			3900	1950	21	C
Vinyl Chloride				10					35.8	C
ACID COMPOUNDS										
2-Chlorophenol				10			258	129	126.4	
2,4-Dichlorophenol				10			202	101	232.6	
BASE NEUTRAL COMPOUNDS										
Benzidine				50			250	125	0.00017	C
Hexachlorobenzene				10					0.00025	C
Hexachlorabutadiene				10			5.1	1.02	0.11	C
PESTICIDES										
Aldrin				0.05			3		0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05			5.3	0.21	0.2	C
Chlordane				0.2			2.4	0.0043	0.00019	C
4,4'-DDT				0.1			1.1	0.001	0.00019	C
4,4'-DDE				0.1			52.5	10.5	0.00019	C
4,4'-DDD				0.1			0.03	0.006	0.00027	C
Dieldrin				0.1			0.2374	0.0557	0.00005	C
Endosulfan				0.1			0.22	0.056	0.64	
Endrin				0.1			0.0864	0.0375	0.26	
Heptachlor				0.05			0.52	0.0038	0.00007	C
Toxaphene				5			*0.73*	*0.0002*	*0.00024*	C
Other Parameters:										
Fecal Col.(col/100ml)										
Chlorine							19	11		
Ammonia								4000		
Chlorides										
Sulfates								30000		
TDS										
Goldbook Values:										

(*1) Toxic Parameters	(*12) WLAa Acute ug/L	(*13) WLAc Chronic ug/L	(*14) WLAh HHNDW ug/L	(*15) LTAa Acute ug/L	(*16) LTAc Chronic ug/L	(*17) LTAh HHNDW ug/L	(*18) Limiting A,C,HH ug/L	(*19) WQBL Avg 001 ug/L	(*20) WQBL Max 001 ug/L	(*21) WQBL Avg 001 lbs/day	(*22) WQBL Max 001 lbs/day	(*23) Need WQBL?
Tetrachloroethylene	2069.232	4541.16	52.68754	662.1542	2406.815	52.68754	52.68754	52.68754	125.3963	0.786551	1.871992	no
Toluene	2037.151	4470.754	325273.8	651.8883	2369.5	325273.8	651.8883	853.9736	2027.373	12.74863	30.26583	no
1,1,1-Trichloroethane	8469.415	18587.07	---	2710.213	9851.149	---	2710.213	3550.379	8428.761	53.00218	125.8296	no
1,1,2-Trichloroethane	2887.3	6336.502	145.4176	923.9361	3358.346	145.4176	145.4176	145.4176	346.0939	2.170881	5.166698	no
Trichloroethylene	6255.838	13729.09	442.5754	2001.862	7276.417	442.5754	442.5754	442.5754	1053.329	6.60703	15.72473	no
Vinyl Chloride	---	---	754.4856	---	---	754.4856	754.4856	754.4856	1795.676	11.26341	26.80692	no
ACID COMPOUNDS												
2-Chlorophenol	413.8464	908.232	889.9265	132.4308	481.363	889.9265	132.4308	173.4844	411.8599	2.589879	6.148492	no
2,4-Dichlorophenol	324.0193	711.0964	1637.634	103.6862	376.8811	1637.634	103.6862	135.8289	322.464	2.027735	4.813936	no
BASE NEUTRAL COMPOUNDS												
Benzidine	401.014	880.0698	0.003583	128.3245	466.437	0.003583	0.003583	0.003583	0.008527	0.000053	0.000127	no
Hexachlorobenzene	---	---	0.005269	---	---	0.005269	0.005269	0.005269	0.01254	0.000079	0.000187	no
Hexachlorobutadiene	8.180685	7.181369	2.318252	2.617819	3.806126	2.318252	2.318252	2.318252	5.517439	0.034608	0.082368	no
PESTICIDES												
Aldrin	4.812167	---	0.00843	1.539894	---	0.00843	0.00843	0.00843	0.020063	0.000126	0.0003	no
Hexachlorocyclohexane (gamma BHC, Lindane)	8.501496	1.478517	4.215003	2.720479	0.783614	4.215003	0.783614	1.026534	2.43704	0.015325	0.036382	no
Chlordane	3.849734	0.030274	0.004004	1.231915	0.016045	0.004004	0.004004	0.004004	0.00953	0.00006	0.000142	no
4,4'-DDT	1.764461	0.007041	0.004004	0.564628	0.003731	0.004004	0.003731	0.004888	0.011605	0.000073	0.000173	no
4,4'-DDE	84.21293	73.92586	0.004004	26.94814	39.18071	0.004004	0.004004	0.004004	0.00953	0.00006	0.000142	no
4,4'-DDD	0.048122	0.042243	0.00569	0.015399	0.022389	0.00569	0.00569	0.00569	0.013543	0.000085	0.000202	no
Dieldrin	0.380803	0.392159	0.001054	0.121857	0.207844	0.001054	0.001054	0.001054	0.002508	0.000016	0.000037	no
Endosulfan	0.352892	0.394271	4.505957	0.112926	0.208964	4.505957	0.112926	0.147932	0.351198	0.002208	0.005243	no
Endrin	0.13859	0.264021	1.830545	0.044349	0.139931	1.830545	0.044349	0.058097	0.137925	0.000867	0.002059	no
Heptachlor	0.834109	0.026754	0.001475	0.266915	0.01418	0.001475	0.001475	0.001475	0.003511	0.000022	0.000052	no
Toxaphene	1.170961	0.001408	0.005058	0.374707	0.000746	0.005058	0.000746	0.000978	0.002321	0.000015	0.000035	no
Other Parameters:												
Fecal Col.(col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	30.47706	77.44614	---	9.752659	41.04645	---	9.752659	12.77598	30.33077	0.190728	0.452796	no
Ammonia	---	28162.23	---	---	14925.98	---	14925.98	19553.04	46419.81	291.8995	692.9827	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	632250.5	---	---	335092.8	---	335092.8	438971.5	1042139	6553.23	15557.67	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

APPENDIX C-2
LA0112771 / AI 83619

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Bogue Lusa Creek
Critical Flow, Qrc (cfs): 16.73
Harmonic Mean Flow, Qrh (cfs): 55.6
Segment No.: 090401
Receiving Stream Hardness (mg/L): 3.0
Receiving Stream TSS (mg/L): 9.27
MZ Stream Factor, Fs: 1
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Calpine Corporation
Facility flow, Qe (MGD): 1.79
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0112771 / AI 83619

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2}}{2.38\ Pw^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrc \times 0.6463 \times Cu)}{Qe}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{Qe}{(Qrh \times 0.6463 + Qe)}$$

$$WLA\ a,c,h = \frac{Cr}{\text{Dilution Factor}} - \frac{(Qrh \times 0.6463 \times Cu)}{Qe}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ Pw\ \pi^{1/2}}{Pf}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{*}}{(2.8)\ Pw\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(Pw^{1/2})}{(Pf)^{1/2}}$$

$$WLA = \frac{(Cr-Cu)\ Pf^{1/2*}}{2.38\ Pw^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and daily avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Daily Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Daily Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Daily average effluent value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X ZID Dilution + Receiving Stream Hardness X (1-ZID Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X ZID Dilution + Receiving Stream TSS X (1-ZID Dilution)).

Hardness Dependent Criteria:

Metal	Formula
Cadmium	$e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

Metal	Multiplier
Arsenic	$1 + 0.48 \times TSS^{-0.73} \times TSS$
Cadmium	$1 + 4.00 \times TSS^{-1.13} \times TSS$
Chromium III	$1 + 3.36 \times TSS^{-0.93} \times TSS$
Copper	$1 + 1.04 \times TSS^{-0.74} \times TSS$
Lead	$1 + 2.80 \times TSS^{-0.80} \times TSS$
Mercury	$1 + 2.90 \times TSS^{-1.14} \times TSS$
Nickel	$1 + 0.49 \times TSS^{-0.57} \times TSS$
Zinc	$1 + 1.25 \times TSS^{-0.70} \times TSS$

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

Metal	Multiplier
Copper	$1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$
Lead	$1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$
Zinc	$1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations using the following formula: (Effluent Hardness X MZ Dilution + Receiving Stream Hardness X (1-MZ Dilution)). Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations using the following formula: (Effluent TSS X MZ Dilution + Receiving Stream TSS X (1-MZ Dilution)).
Hardness dependent criteria:

Metal	Formula
Cadmium	$e^{(0.7852[\ln(hardness)] - 3.4900)}$
Chromium III	$e^{(0.8473[\ln(hardness)] + 0.7614)}$
Copper	$e^{(0.8545[\ln(hardness)] - 1.3860)}$
Lead	$e^{(1.2730[\ln(hardness)] - 4.7050)}$
Nickel	$e^{(0.8460[\ln(hardness)] + 1.1645)}$
Zinc	$e^{(0.8473[\ln(hardness)] + 0.7614)}$

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primarry contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation.

(*19) End of pipe Water Quality Based Limit (WQBL) maximum 30-day daily average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{\text{limiting aquatic}} \times 1.31 = WQBL_{\text{daily average}}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{\text{daily average}}$.

(*20) End of pipe Water Quality Based Limit (WQBL) 30-day daily maximum in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine

the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$).

(*21) End of pipe Water Quality Based Limit (WQBL) maximum 30-day daily average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Daily average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) 30 day daily maximum in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.